BOTANY 2016

Time: 15 Minutes Max. Marks: 08

SECTION "A" (MULTIPLE CHOICE QUESTION)

1. **Choose the correct answer for each from the given options:**

(i) Sex determination in Drosophila was initially observed by:
* T.H. Morgan * Mendel * Watson * Darwin

(ii) Protein synthesis starts with this codon:
* UAG * UAA * UGA * AUG

(iii) The tendency of genes in a chromosome to remain together is called:
* Epistasis * Linkage * Pleiotropy * Synapsis

(iv) Chromosomal theory of heredity was proposed by:
* Watson * Griffith * Walter Sutton * Chase

(v) It is a defect in humans in which blood fails to clot after an external or internal injury:
* Sickle cell anaemia * Phenylketonuria
* Haemophilia * Colour blindness

(vi) The cotyledon in monocot seed is called:
* Scutellum * Integument * Coleorhiza * Coleoptile

(vii) In plants, the process of mitosis is:
* Amphi-astral * An-astral * Multi-astral * Di-astral

(viii) In Turner's syndrome, the condition of chromosome is the example of:
* Monosomic * Nullisomic * Trisomic * Allosomic

(ix) The total aggregate of genes in a population at any time is called:
* Gene pool * Linkage * Crossing over * Genome

(x) The correct sequence of sub-stages during interphase is: * G1G2S * SG1G2 * G1SG2 * G2G1S

(xi) This Biome is called 'the Bread Basket' of the world:
* Savannah * Grassland * Desert * Tundra

(xii) The net movement of water molecule remains in equilibrium, when a cell is placed in:
* Hypotonic solution * Hypertonic solution
* Isotonic solution * none of these

(xiii) These are found in the soil of high salt concentration:
* Hydrophytes * Mesophytes
* Halophytes * Xerophytes

(xiv) Promotion of flowering by cold treatment is called:
* Apomixis * Photoperiodism
* Vernalization * Phototropism

(xv) Increase in diameter of a plant due to activity of vascular and cork cambium is called:
* Primary growth * Secondary growth
* Abnormal growth * Tertiary growth

(xvi) This bacterium lives in the root nodules of leguminous plants:
* Rhizobium * Clostridium
* Cyanobacterium * Azotobacter

BOTANY 2016

Time: 1 Hours 45 Minutes Marks: 32

SECTION 'B' (SHORT-ANSWER QUESTIONS)(20)

NOTE: Answer 10 questions from this section.

(i) Differentiate any one of the following:
(1) DNA and RNA (2) Autosomes & Sex-chromosomes
(ii) Draw graphically the livels of Organization.
(iii) Define Cytokinin OR Gibberellin
(iv) Define Germination. Describe its various types.
(v) Differentiate between Transpiration and Guttation.
(vi) Write a note on Sclerenchyma tissue.
(vii) Define Vernalization OR Photoperiodism.
(viii) Write a note on Phenylketonuria OR Alkaptonuria.
(ix) Draw a chart showing Phenotype and Genotype of different Blood groups.
(x) Write the Edaphic factors of Ecosystem.
(xi) Write a note on one of the following:
(1) Tundra (2) Grassland (3) Conlferous Forest
(xii) A colour blind woman is married to a normal man. How many children of this couple are likely to be colour blind in F_2 generation?
(xiii) Write a note on Genetic Code.
(xiv) Write a note on the significance of Secondary Growth.
(xv) State the Law of Segregation with Phenotypic ratio and Cenotypic ratio.

SECTION'C' (DETAILED- ANSWER QUESTIONS)

NOTE: Answer 2 question from this section(12)

3.(i) Define Meiosis. Explain the various stages of Prophase-1 of Meiosis.
(ii) Define Chromosomes. Describe with diagram the chemical composition of Chromosomes and their ultra-structure.
(iii) Describe the Law of Independent Assortment. Explain it with the help of checker board method.

OR What is Upwelling? Describe the marine life in various zones of the sea.

BOTANY 2017

Time: 15 Minutes | Max. Marks: 08

SECTION "A" MULTIPLE CHOICE QUESTIONS

1. Choose the correct answer for each from the given options:

(i) Appearance of intermediate characters in alleles in generate is called: • Incomplete dominance
• Co-dominance • Test cross • Multiple alleles

(ii) One gene-one enzyme hypothesis was given by:
• Griffith • T.H. Morgan • Chase • Bendle and Tatum

(iii) For their defence, infected plants produce a variety of these chemical compounds:
• Phytoalexin • Phytochrome
• Phytoplankton • Phytohormone

(iv) Germination occurring in constal plants is called:
• Epigeal • Vivipary • Parthenocarpy • Hypogeal

(v) Fibres and sclereids are this type tissues:
• Parenchyma • Sclerenchyme • Collenchyma • Stele

(vi) This is present in RNA but not DNA:
• Adenine • Guanine • Cytosine • Uracil

(vii) Plant hormone responsible for ripening of fruits is:
• Auxin • Ethene • Cytokinin • Gibberellin

(viii) Above 40°C plant cells synthesize relativelylarge amounts of special proteins called:
• Tubulin • Heat-shock • Cold-shock • Ice-shock

(ix) Plants, having both staminate and carpellate flowers, are called:
• Monoccious • Dioecious • Female • Male

(x) A permanent alteration in the DNA sequence is called:
• Crossing over • Zygotene • Mutation • Linkage

(xi) The pairing of homologous chromosomes during Meiosis is called:
• Mitosis • Amitosis • Synapsos • Apoptosis

(xii) The total aggregate of genes in a population at any time is called: • Multiple alleles • Dominant alleles
• Genes pool • Recessive allele

(xiii) The cross fertilization of a phenotypicalley dominant individual with a homozygous recessive is called:
• Back-cross • Test-cross
• Monohy brid-cross • Dihybrid-cross

(xiv) The grandual process by which ecosystems change and develop over time is:
• Succession • Climate • Niche • Synapsis

(xv) In this process strong winds cause deep, occanic cold water to rise towards the surface:
• Up-welling • Respiration • Autecology • Ecology

(xvi) Each chromosome is attached to spindle fibre though:
• Centriole • Aster • kinctochore • Cell plate

BOTANY 2017

Time: 1 Hours 45 Minutes Marks: 32

SECTION 'B' (SHORT-ANSWER QUESTIONS)(20)

NOTE: Answer 10 questions from this section.

2.(i) What do you understand by the term Hydathode?

(ii) Give any two salient features at Gymnosperm life cycle

(iii) Name the components of DNA.

(iv) Name the scientists known for the following discoveries.

(a) Ladder type organization of DNA.

(b) One gene-one enzyme hypothesis.

(v) Differentiate between Leptotene and Zygotene.

(vi) Define Allele.

(vii) Draw a flow chart for ecological level of organization.

(viii) How many types of decomposer exist in an ecosystem? Name them. (ix) Name the different type of Abiotic components of Ecosystem.

(x) What will be the result of a cross between Haemophilia male and Normal female?

(xi) Describe the function of Abscisic acid OR Ethene gas.

(xii) Give definition of Gene pool OR Creasing over.

(xiii) Name various aspects of Homeostasis.

(xiv) State the law of Independent Assortment.

(xv) Write only the names of different kinds of Asexual reproduction.

3. Attempt any five part questions.

(i) What are Annual rings? (ii) Write five roles of Ausin.

(iii) Write note on photoperiodism OR Vernalization.

(iv) State Coniferous forests of Pakistan.

(v) Describe three substages of Interphase.

(vi) Give cross b/w Red-eyed female and White-eyed male in drosophila. (vii) Define Meristem and mention its types OR Differentiate between DNA and RNA.

(viii) Write note on Genetic code.

SECTION'C' (DETAILED- ANSWER QUESTIONS)

NOTE: Answer 2 question from this section(12)

4. Prove with the help of experiment that DNA is a genetic material. OR Explain Watson and Crick model of DNA and write its replication.

5. What is Ecological succession? Describe various seral stages of Hydrosere.

6. Write Human defect disorder caused due to abnormal number of chromosomes.

BOTANY 2018

Time: 15 Minutes Max. Marks: 08

SECTION "A" MULTIPLE CHOICE QUESTIONS

1. Choose the correct answer for each from the given options:

(i) The production of a pond ecosystem are:
- Phytoplankton • Capparis • Zooplankton • Prosopis

(ii) A type of orderly or programmed cell-death is:
- Leukemia • Apoptosis • Terminalization • Necrosis

(iii) In epigeal germination cotyledons are carried above the soil due to rapid growth of:
- Radicle • Hypocotyl • Plumule • Epıcotyl

(iv) Promotion of flowering by cold treatment to the imbibed seeds is called:
- Vivipary • Vernalization • Garner • Lysenka

(v) Germination of seed within the fruit while still attached to the plant is:
- epigeal • hypogeal • viviparous • oviparous

(vi) Movement unrelated to the direction of diffused stimuli is: • nastic movement • turgor movement
- nutational movement • Curvature movement

(vii) When the growth of the main axis stops, due to a flower on tip, the inflorescence is called:
- cymose • racemose • corymb • catkin

(viii) Both polynucleotide strands of DNA remain separated by: • 5 A° • 10 A° • 15 A° • 20 A°

(ix) Information from DNA regarding the amino acid sequence of a protern, is copiod into:
- mRNA • rRNA • tRNA • ribosome

(x) The tendency of genes iocated on the same chromosome to inherit together is called:
- crossing over • co-dominance
- incomplete dominance • linkage

(xi) The result of f_1 generation for colour blindness of a carrier female is crossed with a normal male will be:
- son 25% colour blind, daughter 25% carrier
- 50% diseased, 50% carrier • all carrer • all colour blind

(xii) The term ecosystem was first introduced in 1935 by:
- Tansely • Ernest I lackel • Charies Dawin • de Veries

(xiii) Crossing over takes place during:
- leptotene • zygotenc • pachytene • diplotene

(xiv) Exudation of water by hydathodes is: • Pollination
- Guttation • Transcription • Transpiration

BOTANY 2018

Time: 1 Hours 45 Minutes Marks: 32

SECTION 'B' (SHORT-ANSWER QUESTIONS)(20)

NOTE: Answer 10 questions from this section.

2.(i) Define Paratonic movement.
(ii) What do you mean by Double fertilization?
(iii) Name various Meristematic tissues found in plants.
(iv) Define Karyotype.
(v) Name only the biotic factors of an ecosystem.
(vi) How Halophytes cope with in salt marshes?
(vii) Define any one:
- Incomplete dominance
- Co-dominance

(viii) Give names of Recemose inflorescences having eiongated Axis.
(ix) Name Polygenic traits in human, plants and animals.
(x) Define test cross. (xi) State the role of Pollen tube.
(xii) Define Deletion, Duplication, Translocation & inversion.
(xiii) When do you find Mitotic and Meiotic cell divisions in plant? (xiv) Define Photoperiodism.
(xv) Explain Apical meristem.

3. Attempt any five part question.
(i) Mention how plants respond to Drought stress?
(ii) Find the possible blood group of children if the blood group of father is O and that the mother is AB.
(iii) What is an autosome? How many Autosomes are there in a human cell? (iv) What is Down's Syndrome?
(v) Define succession and name its various types.
(vi) Write a note on Phenylketonuria.
(vii) Define Biological Clock and Circadian Rhythm.
(viii) Write a note on Sclerenchyma.

SECTION'C' (DETAILED- ANSWER QUESTIONS)

NOTE: Answer 2 question from this section(12)

4. Define the term Ecosystem. Name the various abiotic components of an ecosystem. Describe climatic factors only. 5. What we Phytohormones? Name various Phytohormones and discuss the role of Auxins.
6. Describe Prophase I of Meiosis with diagrams.
OR Describe the Law of Independent Assortment with the help of checker board.

BOTANY 2019

Time: 15 Minutes Max. Marks: 08

SECTION "A" MULTIPLE CHOICE QUESTIONS

1. Choose the correct answer for each from the given options:

(i) Crossing over takes place during this stage:
- Leptotene • Zygotene • Pachytens • Diplotene

(ii) Only this one of the following is a topographic factor of an ecosystem:
- Earth surface • Temperature • Water • Fire

(iii) The sea below 2000 metres having no light is called:
- Abyssal zone • Euphotic zone
- Benthic zone • Neretic zone

(iv) Exusmosis takes place if a cell is placed in:
- Hypotonic solution • Isotonic solution
- Equtitonic solution • Hypertonic solution

(v) Plants, infected with disease, produce these chemical substances:
- Photoreceptors • Chemoreceptors
- Phytoalexins • Heat-shock proteins

(vi) Indole acetic acid is the name of:
- Cytokinin • Auxin • Gibberellin • Abscissic acid

(vii) Catkin inflorescence is observe in:
- Zinnia • Mulberry • Grasses • Rose

(viii) Messenger RNA triplets are called:
- Subcodon • Codon • Anticodon • Decodon

(ix) Scientific study of soil is called:
- Geography • Pedology • Topography • Geology

(x) Plants of intertidal zone of sea produce a jelly-like substance called:
- cellulose • agar • pectin • lysogen

(xi) Multiple effect of a single gene is called:
- Pleiotropy • Heleiotropy • Epistasis • Epinastic

(xii) This biome is called the bread basket of theworld:
- Tundra • Savannah • Grassland • Tropical rain forest

(xiii) The attachment point of two chromatids of a chromosome is called: • Centromere
- Kinetochore • Chromonema • Chromomere

(xiv) At low temperature, ice crystals are formed in:
- Mitochondria • Nucleus • Ribosome • Cell wall

(xv) All are chemical messengers except: • Biorhythms
- Phytohormones • Growth regulators • Hormones

(xvi) This hormone helps in theclosing of stomata:
- Cytokinin • Ethene • Abscissic acid • Gibberellin

BOTANY 2019

Time: 1 Hours 45 Minutes Ma-ks: 32

SECTION 'B' (SHORT-ANSWER QUESTIONS)(20)

NOTE: Answer 10 questions from this section.

2.(i) Name any two aspects of Homeostasis.
(ii) Write any two advantages of Secondary tissues.
(iii) Define Pollination. Name its types.
(iv) Name the kinds of Cymoae inflorescence.
(v) What is meant by Double fertilization?
(vi) Draw Karyotype of Drosophila.
(vii) Name different types of Cell division.
(viii) Name various types of plants on the basis of relative requirement of light.
(ix) Name the horizontal zones of sea.
(x) How can we estimate the age of a troe?
(xi) Mention any two functions of Auxin.
(xii) Differentiate between isogamy and Oogamy.
(xiii) Name various nitrogenous bases found in DNA nucleotides.
(xiv) Which cross helps to determine the homozygosity or heterozygosity of a dominant parent?
(xv) Name the two main types of movements in plants.

3. **Attempt any five part question.**
(i) Explain the responses of plants against herbivory.
(ii) Define Succession. Name its various types.
(iii) Classify Chromosomes on the basis of position of centromere.
(iv) Discuss advantages & disadvantages of Transpiration.
(v) Write note on any one of thefollowing:
(i) Seed dormancy (ii) Vernalization
(vi) How is Apoptosis different from Necrosis?
(vii) Compare Mitosis with Meiosis.
(viii) Write note on any one: (i) Desert ecosystem
(ii) 4 forests of Pakistan.

SECTION'C' (DETAILED- ANSWER QUESTIONS)

NOTE: Answer 2 question from this section(12)

4. Describe Watson & Crick model of DNA. How does this model explain semi-conservative replication of DNA?
5. Define sex-linked inheritance. Exdplain with reference to haemophilia in man.
6. What do you mean by Biogeochemical cycle? Describe Nitrogen cycle.

OR Define Meiotic errors. Describe the defects caused due to abnormal number of chromosomes in human beings.

BOTANY 2021

(AS PER CONDENSED SYLLABUS)

TIME: 1 Hour 30 Minutes (40 Marks)

NOTE:

i) This section consists of 20 part questions and all are to be answered. Each question carries ONE mark.

ii) Do not copy the part questions in your answer book. Write only the answer in full against the proper number of the question and its part.

SECTION 'A' (Multiple Choice Questions) (20)

1. Choose the correct answer for each from the given options:

1. Solution having low concentration as compared to the cell sap
* Hypertonic * Hypotonic✓
* Isotonic * Solute potential

2. In terms of number of chromosomes, the endosperm of send is:
* haploid * Diploid * Tripoid✓ * Quadreploid

3. Two polynucleotide chains of DNA are apart from each other by:
* 3A°A * 4°A * 20°A✓ * 34°°A

4. A cell division without spindle is:
* Amitosis✓ * Mitosis * Meiosis * Apomines

5. This biome is called the "bread basket" of the world:
* Savanah * Grass land✓
* Tundra * Tropical Rain forest

6. This group of plants is found in soil of high salt concentration:
* Hydrophytes * Mesophytes
* Halophytes✓ * Xerophytes

7. The breakdown of rocks due to environmental action is called:
* Topography * Pedology
* Weathering✓ * Edaphic

8. The producer of a pond ecosystem is:
* Bacteria * Phytoplankton * Zooplankton * Fungi

9. This condon is start condon: ✓
* AUG✓ * UAG * UAA* UGA

10. Meristem responsible for secondary growth:
* Apical * Intercalary * Lateral✓ * Cork

11. During the process the translation, cells use this to make protein:
* RNA✓ * DNA * Chromosomes * Nucleus

12. The best soil for plant growth is:
* Sand * Silt * Loam✓ * Clay

13. Total aggregation of gene in a population is called:
* Chromosomes * Multiple gene
* Gene pool✓ * Population

14. At High temperature plants produce these to preserve enzymes:
* Fructans * Unsaturated fatty acids
* Heat shock proteins✓ * Phytoalexins

15. The genetic makeup of any individual is called:
* Allelomorph * Phenotype
* Synapsis * Genotype✓

16. During this stage of mitosis chromosomes arrange on equatorial plate:
* Prophase * Metaphase✓
* Anaphase * Teleophase

17. The two chromatids of the same chromosome are called:
* Chromonema * Centromere * Sister chromatid✓* Kinetochore

18. Germination of seed inside the fruit is called:
* Epigeal * hypogeal * viviparous✓ * hypocotyl

19. Movement of plant unrelated to the direction of stimuli is known as:
* Nuatation * Tropic * Nastic✓ * Turgor

20. These tissues are commonly known as conducting tissue:
* Vascular tissues✓ * Cork Cambium
* Meristem * Ground tissues

SECTION 'B' (Short-Answer Questions) (12)

NOTE:

2. Attempt any four part questions. Each question carries ONE mark. Answer should not be exceed more than two lines

i) Define Hemeostasis.

ii) What is amitosis?

iii) Mention number of autosomes and sex chromosomes in a human cell.

iv) Name four parts of an Angiospermic flower.

v) Define Apomixis.

vi) Why hydropytes do not have cuticle on stem and leaves?

vii) Name various types of RNA involved in protein biosynthesis.

3. Attempt any four part questions. Each question carries two marks. Answer should not exceed five lines.

i) State the law of segregation?

ii) Name various techniques of tissue culture and discuss any one.

iii) Make a cross between a color blind male and normal female and mention result.

iv) Mention different types of chromosomes according to the position of centrometre.

v) What is the difference between Lentic and Lotic water? Name the sub-divisions of lentic water.

vi) Define mutation. How does ionization radiation damage the DNA?

vii) Define tropic movement. Name various types of tropic movement in plants.

viii) Briefly discuss abiotic components of Tropical rain forest.

SECTION "C" (Detailed Answer Questions)(08)

NOTE: Attempt Two questions from this section. All questions carries equal marks.

4. State Mendel's law of independent assortment with the help of checker board.

5. How plants respond to environmental stress? State any three.

6. Describe prophase 1 of meiosis (No diagram needed)

7. Greif a brief description of structure of DNA.

نوٹ: سال 2020 میں گیارہویں اور بارہویں جماعت کے امتحانات نہیں ہوئے تھے۔

BOTANY 2022

TIME: 2 Hours (40 Marks)

SECTION 'A' (Multiple Choice Questions)(16)

1 Choose the correct answer for each from the given options:

(i) Enzyme are protected at high temperature by:
* Ice-Crystal * Super Cooling
* Freezing Tolera ce * Heat Shock Proteins✓

(ii) Chromosomal Theory of Heredity was proposed by:
* Karl Correns * Hershey and Chase
* George Beadle * Walter Sutton✓

(iii) In this sub-stage of Meiosis Prophase I Terminalization occurs:
* Pachytene * Leptotene * Diplotene * Diakinesis✓

(iv) A cell division without spindle is:
* Amitosis✓ * Mitosis * Meiosis * Apomixis

(v) This is present in RNA but not in DNA.
* Uracil✓ * Cytosine * Adenine * Guanine

(vi) The multiple effects of a single gene is termed as:
* Polygenic inheritante * Multiple Alleles
* Pleiotropy✓ * Incomplete Dominance

(vii) If the sequence of base in one chain is ATTGCAT, the base sequence of its Partner in the duplex is:
* ATAGCAT * AATGCAT * GCCATTA * TAACGTA✓

(viii) The first line of defence against pathogen in plants is:
* Endodemis * Cortex * Epidermis✓ * Cuticle

(ix) Gemination of seed within the fruit while still attached to the plant is:
* Epigeal
* Hypogeal * Viviparous✓ * Oviparous

(x) Promotion of flowering by cold treatment given to imbibed seeds is called:
* Vernalization ✓ * Apomixis
* Parthenocarpy * Phototropism

(xi) Both polynucleotide strands of DNA remain separated by:
* 5A * 10 A✓ * 15A * 20A

(xii) Dark zone of oceanic region is:
* Euphotic * Aphotic✓ * Neritic * Profundal

(xiii) The cotyledon in monocot seed is called:
* Epicotyl * Coleorhiza * Coleoptile * Scutellum ✓

(xiv) Example of ecosystem having lotic water is:
* Waterfall✓ * Swamp * Pond * Lake

(xv) In guttation plants lose excess water in the form of liquid from special pores on leaves called: * Air pores

* Sunken Stomata * Hydathodes✓ * Lenticles

(xvi) Death of cell due to injury is called:

* Apoptosis ✓ * Nectosis * Mitosis * Meiosis

SECTION "B" (Short Answer Question) Marks: 16

2. Attempt any Eight part questions. Each question carry one mark Answer should not exceed two lines.

i) How plants cope with the Herbivory?
ii) Name various Nitrogen bases of DNA.
iii) Differentiate any one of the following:
(a) DNA and RNA (b) Autosome and Sex Chromosome
iv) What is a gene?
v) Define Mitotic Apparatus
vi) What Paratonic Movement?
vii) How abscissic acid responds to drought?
viii) Define Lentic Water.
ix) Name various aspects of homeostasis
x) Define Double Fertilization.

3. Attempt any Four part questions Each question carries two marks. Answer should not exceed

i) What is Test Cross? Why is it performed?
ii) Draw a chart to show the chemical composition of chromosome.
iii) Differentiate any one of the following:
a) Mitosis and Meiosis b) Neritic and Oceanic
iv) Write note on any one of the following:
a) Seed Dormancy b) Photoperiodism
v) Write note on coniferous forests of Pakistan.
vi) Define Invitro Fertilization.

Section C (Detailed –Answer Question) (8

NOTE: Attempt any One question from this section.
All questions carry equal marks.

4. a) Explain multiple allele with the help of Human Blood Group.
b) Describe various Climatic factors as abiotic components of an ecosystem OR Name various stages of xerosere. Describe only two

5. a) Describe sex linked inheritance in man with reference to color blindness
b) Describe various stages of Prophase of Meiosis. (Diagram not required)

6. a) Describe Watson and Crick model of DNA.
b) What are Phytohormones? Name various Phytohormones. Discuss any four roles of Auxins.